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13 April 1984

USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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USSR REPORT

CONSTRUCTION AND RELATED INDUSTRIES

FOREIGN BROADCAST INFORMATION SERVICE

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CONSTRUCTION PLANNING AND ECONOMICS

GOSSTROY DEPUTY CHAIRMAN OUTLINES OBJECTIVES FOR 1984

Moscow STROITEL'NAYA GAZETA in Russian 4 Jan 84 p 1

/Article by I.I. Ishchenko, deputy chairman of USSR Gosstroy: "Towards New Goals"/

/Text/ "The scales of capital construction in the country are tremendous. The implementation of our plans for increasing industrial production, strengthening the logistical base for agriculture and improving housing and cultural-domestic conditions for workers is associated with this construction" (from the text of a speech delivered by Comrade Yu.V. Andropov during the December (1983) Plenum of the CPSU Central Committee).

In response to a request by a correspondent of STROITEL'NAYA GAZETA, the deputy chairman of USSR Gosstroy I.I. Ishchenko comments upon a map of the more important underway construction projects of 1984.

Our country has commenced the new year of 1984 in an atmosphere of high political and labor activity among all of the people. As a result of the consistent implementation of the party's program aimed at achieving more efficient use of the potential and advantages offered by developed socialism and strengthening organization and discipline, positive improvements have been noted in the national economy and the people are displaying a better attitude in carrying out their work.

The workers in our branch, similar to all of our Soviet people, have been inspired towards achieving new successes in the building of communism by the decisions handed down on the eve of the new year during the Plenum of the CPSU Central Committee and the session of the USSR Supreme Soviet, which launched preparations throughout the entire country for the regular elections to the highest organ of state power in the USSR. "A most important concern at the present time" emphasized Comrade Yu.V. Andropov in his speech delivered before the December Plenum of the CPSU Central Committee, "is to not lose the tempo that has already been developed or the overall positive attitude towards work and to develop the positive processes in a more active manner."

The state plan for the economic and social development of the country during 1984, approved by the USSR Supreme Soviet, will henceforth serve as a law of

economic life for all branches of the economy. It is oriented to a greater degree than earlier was the case towards raising the efficiency of social production, achieving dynamic development for the national economy and strengthening its social direction. The task has been assigned: to achieve growth in output with fewer specific material expenditures, particularly fuel and metal. And this demands that special attention be given to such indicators as growth in labor productivity, reduced production costs and improved quality of products.

The plan for 1984 calls for the carrying out of considerable capital construction tasks. Capital investments on the whole, for all sources of financing, were established in the amount of 149.6 billion rubles, or 3.9 percent more than last year. Moreover, they should be used in a manner so as to accelerate the placing in operation of production capabilities and installations. The plans call for the placing in operation of 5.8 percent more fixed capital than last year and to bring the annual volume of unfinished construction to 75 percent, that is, to reduce it by roughly 10 percent. A substantial increase in capabilities is expected through the technical re-equipping and modernization of existing enterprises. Roughly 25.9 billion rubles have been allocated for this purpose -- 2.3 billion rubles more than the figure called for in the five-year plan for this year.

Just as in the past, a great amount of attention is being given to the development of power engineering -- a branch which is playing a very important role in accelerating technical progress. Electric power stations under construction must furnish an overall turbine current of 13.5 million kilowatts, of which amount 40 percent will be provided by atomic stations. This conforms to the program outlined during the 26th party congress -- to develop atomic power engineering at an accelerated tempo. Included among the more important underway construction projects are the Balakovo, Zaporozhye, Kalinin, Kolskiy, Yuzhno Ukrainskaya and Smolensk AES's /atomic electric power plant/. Here the plans call for the placing in operation of reactors which will be capable of producing 5.4 million kilowatts. New capabilities will appear at the Surgut GRES-2 /state regional electric power plant/ (800,000 kilowatts), the Ekibastuz GRES-1 (500,000 kilowatts), the Sayano-Shushenskoye GES /hydroelectric power plant/ (two turbines for 640,000 kilowatts each) and others. The country's unified power system will be expanded: the length of the 35 kilovolt and higher electric power transmission line will be increased by 34,200 kilometers.

In keeping with the five-year plan, the petroleum, gas and coal industry will undergo accelerated development. Units for the initial refining of petroleum and the catalytic cracking of raw materials at the Chimkent Plant, a number of producing wells, production efforts associated with the hydraulic purification of diesel fuel and other installations will be turned over to the operations personnel.

The gas pipeline builders have been assigned an extremely important task -- to install gas mains the overall length of which will be 12,200 kilometers, including Urengoy - Tsent (1st phase), Yelets - Kursk - Dikanka, Khiva - Beyneu, Beyneu - Aleksandrov Gay, Minsk - Gomel. Included among underway projects are the Mubarek Gas Processing Plant and the 2d phase of the Orenburg Helium Plant.

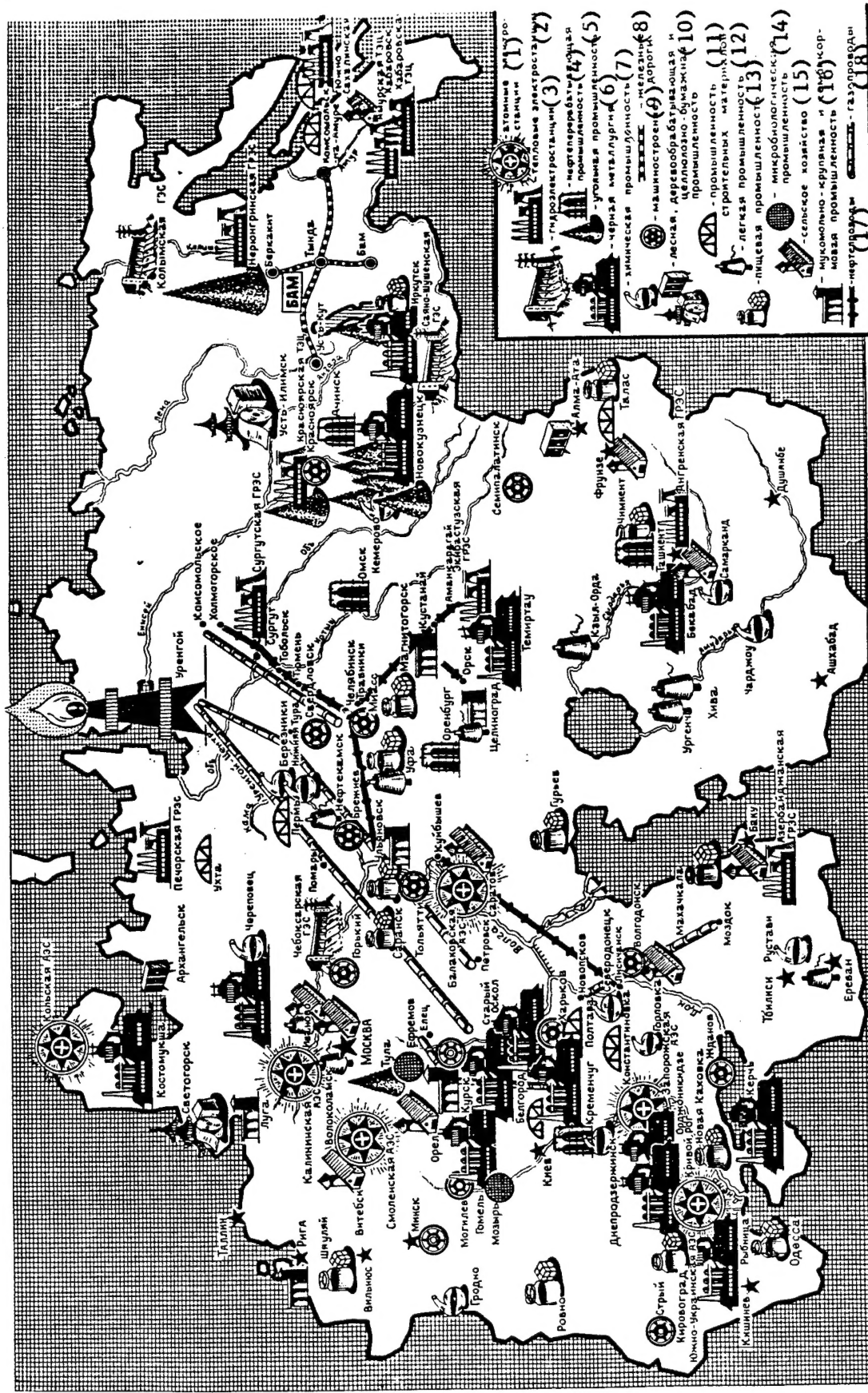
The production capabilities for mining coal will be increased by 20.5 million tons annually. Among the new large open cut mines -- Neryungrinskiy in the Yakutsk ASSR, Azeyskiy imeni 50-Letiya SSSR (Irkutsk Oblast), Pavlovskiy No. 2 (Maritime Kray), Kolmogorovskiy (Kemerovo Oblast). Work must be completed on the erection of enrichment factories for the processing of 11 million tons of coal annually.

As is well known, capital construction is one of the principal consumers of metal -- it uses more than 20 million tons of rolled metal annually. The development of many other branches is dependent upon the availability of metal. Thus an important task for this current year is that of increasing its production and improving the assortment of metal. Ferrous and non-ferrous metallurgy will intensify its capabilities mainly through the modernization and technical re-equipping of enterprises and also by expanding them. Preparations are required for the placing in operation of capabilities for mining 20 million tons of iron ore -- at the Kostomuksha (Karelian ASSR), Stoylenskiy, Lebedin (Belgorod Oblast, Rudnogorsk (Irkutsk Oblast) and other mining-enrichment combines. The plans call for placing capabilities in operation for the production of 2.6 million tons of steel, including at the Oskolskiy Electro-Metallurgical Combine imeni L.I. Brezhnev and at Belorussian and Moldavian metallurgical plants. The capabilities for producing rolled metal must be increased by 2.5 million tons and for the processing of scrap metal -- by 3.6 million tons. Construction work is continuing at Cherepovets on a large blast furnace -- a volume of 5,500 cubic meters and involving the use of modern technological processes.

A large program of work is awaiting builders at installations of the chemical industry. The carrying out of this program will make it possible to expand the production volume for mineral fertilizers by 3.3 percent, chemical fibers and filaments -- by 5.8, synthetic rubbers -- by 8.3, synthetic and plastic substances -- by 11.8 percent and also chemical agents for protecting plants and other types of products. Large pilot complexes are being erected at the production associations Azot in Berezniki and Severodonetsk, P/O Fosfaty in the Moscow region, P/O Fosforit at Kingisepp, P/O Khimprom at Sverdlovsk and at the Samarkand and Novokokandsk chemical combines.

The capital investments allocated for further development of machine building are making it possible, at key positions of this branch, to reorganize substantially and expand the production potential and to organize the production of goods in satisfaction of the modern requirements. Capabilities must be placed in operation at the Kharkov Turbine Plant imeni Kirov, the Volgodon Atomash, Uralsk Turbine Motor Plant imeni Voroshilov and at many other enterprises -- the more important underway construction projects noted on the map.

The plan reflects the efforts of the party and government aimed at further expanding the production and improving the quality of consumer goods. Towards this end, the capabilities of the light industry have been increased considerably. The builders must place the following factories in operation: cotton spinning -- at Neftekamsk, Novocheboksarsk and in Maralik Settlement (Armenian SSR), spinning-thread -- in Tselinograd, tanning plants -- in the cities of Rasskazovo (Tambov Oblast), Narva (Estonian SSR) and other installations.



A great contribution must be made towards implementing the USSR Food Program. A number of new enterprises must be prepared for the production of meat, dairy, confectionery and bakery products, vegetable oil, granulated sugar, canned goods, cheese and other products. The capabilities of the mixed feed, milling-groats and microbiological industry are being increased. The list of underway construction projects includes the 4th Bashkir Sugar Plant, the Chimkent Oil and Fat Combine, the Mozyr Plant for the Production of Nutrient Yeasts (Gomel Oblast) and the Yefremov Biochemical Plant (Tula Oblast).

Preparations are being made in many oblasts of the RSFSR and in other union republics for the placing in operation of poultry factories having an overall capability for handling 3.4 million laying hens and 64.8 million head of meat poultry annually, highly mechanized animal husbandry complexes for the raising and fattening of cattle (30,100 head) and swine (259,000 head) and also hothouse combines for an area of almost 167 hectares and storehouses for vegetables, potatoes and fruit.

Transport operations will become more capable and more reliable during the coming year. A great volume of work must be carried out at transport projects already underway. The plans call for the placing in operation of 1,061 kilometers of new railroad lines and secondary track and the electrification of 1,058 kilometers of railroad. Work carried out over a period of many years is nearing completion -- the laying of the main track in all sectors of BAM /Baykal-Amur Trunk Line/.

The network of motor vehicle highways is being extended by more than 12,000 kilometers and new seawalls are appearing in the ports as well as aircraft runways.

The plan includes a broad range of measures aimed at raising the standard of living of our Soviet people. And the plans call for a high goal to be achieved this year in housing construction -- the placing in operation of 109 million square meters of housing space. The construction work will be carried out on an all-round basis: general educational schools and childrens' pre-school institutes for 818,000 and 580,000 pupils respectively must make an appearance, hospitals for 53,300 beds and dispensaries and polyclinics capable of handling 96,100 patients per shift.

During the December (1983) Plenum of the CPSU Central Committee, it was pointed out quite fairly that the status of affairs in capital construction, just as in the past, is not in keeping with the requirements of our rapidly growing socialist economy. The branch's workers must draw the proper conclusions from this criticism and they must undertake very decisive measures aimed at eliminating the shortcomings and achieving substantial improvements in the organization of the work.

The methods available for raising the efficiency of capital construction are well known. One principal such method is that of improving the level of industrialization and transferring a considerable portion of the work to plant conditions, where high quality elements of buildings and installations can be produced with minimal expenditures. It is precisely during this stage in construction production work that large reserves are to be found for realizing economies in the use of labor.

Improvements in the level of industrialized operations require an acceleration in scientific-technical progress. New technologies and equipment, all-round mechanization, the automation of production processes and economic structures, products and materials must be introduced into operations in a tireless manner. It must be remembered that our branch is a resource-intensive one and that reductions in expenditures are still being carried out all too slowly. More attention should be given to this vast reserve and more complete use should be made of it.

Importance is attached to realizing further improvements in construction administration. It is no secret that great losses are occurring as a result of worker idle time at the construction projects and also from the unsatisfactory use of machines and mechanisms. A review is presently being carried out of proposals aimed at improving branch management, with consideration being given to regional interests, a reduction in the number of elements, an expansion in the number of mobile formations and the introduction of progressive forms and methods for organizing labor. It is assumed that the implementation of these proposals will produce a great economic effect.

Still another factor is of equal importance -- waging a decisive campaign against violators of production discipline, against a lack of discipline generally and against a lack of responsibility at official posts and work positions. Is it necessary to prove how these shortcomings, caused by individual persons, interfere with the work and at times reduce to zero the great effort being put forth by the collectives?

The December Plenum of the CPSU Central Committee called upon all of the country's workers to launch an extensive socialist competition aimed at fulfilling and over-fulfilling the 1984 plan and the tasks of the five-year plan as a whole and also at achieving high production results. This appeal received a warm response in the branch's organizations and enterprises and high socialist obligations are now being developed. It is important for the leaders of collectives and their social organizations to support these fine undertakings in every possible way and to display concern for creating the conditions required for highly productive labor and for raising the quality of the work.

The branch's workers have a patriotic obligation to ensure unconditional fulfillment of the tasks planned for the underway construction projects of 1984.

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CONSTRUCTION PLANNING AND ECONOMICS

CAPITAL CONSTRUCTION IN 11TH FIVE-YEAR PLAN

Moscow POLITICHESKOYE SAMOOBRAZOVANIYE in Russian No 12, Dec 83 pp 42-48

[Article by Candidate of Economic Sciences A. Bryachikhin: "The Problems of Capital Construction at the Present Stage"]

[Text] In the amount of investments the Soviet Union holds first place in the world. No other country is building as much as the USSR. In our country approximately a fifth of the national income is being used for the increase of the production potential and the building of housing and municipal, personal service and sociocultural facilities. In fact our entire country is an enormous construction site. On the average 8 new enterprises and not less than 40,000 well-appointed apartments are put into operation daily in the USSR. In the past three five-year plans fixed capital worth 1.5 trillion rubles was put into operation. For comparison let us indicate that the United States required nearly 30 years to perform such a program.

During the current five-year plan 700 billion rubles should be assimilated in construction. Its third, middle year accounts for a significant amount of work. The trend toward the intensification of construction work is clearly visible in the 1983 plan. Thus, whereas state capital investments will increase by 4.4 percent, the placement of fixed capital into operation will increase by 5.9 percent. The efforts of construction workers are being concentrated on the renovation and retooling of operating enterprises. Changes are also occurring in the ratio between the expenditures on equipment and the assets being allocated for construction and installation work. This year the expenditures on equipment should increase from 39.1 percent to 42.1 percent.

The CPSU and the Soviet state, while giving due credit to the achievements of the construction workers, constantly require of them the improvement of the quality of all work and the increase of the efficiency of construction work. The close attention of the party and government to this sector of the economy is explained not only by the exceptional importance of the construction industry in the socioeconomic development of society and the difficulties of the simultaneous construction over the entire territory of the country of a large number of projects, but also by a number of factors of a different nature.

Such a situation, when the assets allocated for capital construction are completely spent, but fewer production capacities or other facilities, which have been completed and placed into operation, are placed into operation than was

envisaged by the plan, frequently forms in practice. In particular, during the 10th Five-Year Plan only one project in three was turned over within the standard time and only two of them achieved the rated capacity on the set date.

This is explained by the aggravation of old unsolved problems and the emergence of new ones, which did not enable the participants in construction to accomplish the tasks facing them quickly and in a high quality manner, in conformity with the requirements of the times. In particular, during the 10th Five-Year Plan it was not possible to properly overcome the dispersal of assets first of all due to the shortcomings in planning, the low quality of designing, irregularities in supply, low labor and performer discipline and the overload of production capacities.

It is also impossible to regard as normal the state of affairs with the provision of construction projects with planning estimates and with their material and technical supply. The complete supply of the majority of contracting organizations with raw materials and materials and the supply of resources of various kinds are carried out according to the average need per million rubles of the estimated cost of the construction and installation work. Meanwhile, as practice attests, this method yields a deviation from the real need.

We Recommend That a Note Be Made

From 1918 to 1982 the total amount of capital investments in the USSR amounted (in comparable prices) to 2,380,200,000,000 rubles.

They were broken down by sectors of the national economy in the following manner (billions of rubles):

industry.	851.1
agriculture	430.9
housing services (construction, including individual)	385.6
construction of trade, municipal, scientific institutions and so forth	362.8
transportation and communications	265.3
construction.	84.5

Instances, when planning and economic organs do not deliver in good time to the performers the title lists of construction projects and the control figures of the annual plans, are still being encountered. So far it has also not been possible to solve completely the problem of the smoothness and the proper interconnection in the work of all the participants in construction. A portion of the projects, which are ready for operation, are placed into operation during the fourth quarter of the year. Planning and technological discipline is not being fully observed in the sector and as a result of this, as well as of the shortcomings in educational and organizing work, a significant number of violations of labor discipline are being committed.

The November (1982) CPSU Central Committee Plenum, having analyzed the situation which had formed in capital construction, demanded the determined improvement of affairs in this sector of the national economy. In February 1983 the CPSU Central Committee, in making the decisions of the plenum more exact and taking into account the state of affairs in housing, cultural and general

construction, adopted the decree "On Steps on the Assurance of the Fulfillment of the Plans of the Construction of Apartment Houses and Social Facilities."

In this decree the CPSU Central Committee demanded of the executives of the ministries and departments and the councils of ministers of the union republics that they radically change the attitude toward residential housing construction. It was proposed to elaborate and implement a set of measures which ensure the placement into operation of apartment houses, municipal and social facilities in the planned amounts. Here the need to improve significantly the quality of construction and to stop resolutely the attempts to accept projects with flaws in workmanship was emphasized.

The attention of the executives of the construction ministries was directed to their personal responsibility for the fulfillment of the plan assignments on the construction of apartment houses, children's preschool institutions, schools, vocational and technical schools, hospitals and polyclinics.

At the June (1983) CPSU Central Committee Plenum the urgent need for the quickest possible assurance of the well-adjusted continuous operation of the economic mechanism and all its parts was noted once again, "this," Comrade Yu. V. Andropov stressed, "is both a need of today and a program task for tomorrow."

Of all the diverse problems, which are connected with the improvement of construction work, we will detail in a little more detail with those which, in our opinion, require immediate solution.

Now the completion of the changeover of construction to the new conditions of labor, which was begun in conformity with the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," is the most important of them.

In recent times a number of specific practical steps on the implementation of this important decree have been taken by central planning, territorial and sectoral organs of the management of capital construction. In particular, several new enforceable enactments, which regulate the work of design organizations, have been approved, the 5-year planning of planning and surveying work has been introduced. Specific steps have been taken on the strengthening and updating of the material and technical base of planning and surveying, contracting and other organizations, which are involved in construction. The majority of contracting organizations are using credits of banks for the third year now instead of advances which are received from the client.

However, it is still a long way to the completion of the work on the reorganization of the economic mechanism in capital construction. This work, due to the lack first of all of the proper performer discipline, is being carried out unjustifiably slowly and is not always performed with a high quality. A portion of the enforceable enactments have been drawn up without adequate scientific substantiation and without coordination with the enforceable enactments of other sectors of the national economy, which are associated with construction. A number of important questions are still awaiting their settlement. In

particular, the regulations of the contract and the financing of construction projects, the standards of pricing and several other documents necessary for the improvement of the economic mechanism of the sector, which conform to the present conditions, have not been elaborated.

The speeding up of the drafting and introduction of standard documents, which are connected with the implementation of the decree named above, is an important factor of the improvement of affairs in capital construction.

The lack of conformity of the organizational forms of the management of contracting organizations to the increased amounts of work and the complexity of the tasks facing them is one of the factors which are checking the further development of construction.

Many ministries and departments are engaged in construction in the country. A significant number of small contracting construction organizations are subordinate to them. The latter are managed according to very diverse diagrams, which were drawn up by the departments themselves. It happens that two or else three diagrams of the management of construction organizations are used in the same ministry. In recent years as a result of, so to speak, "natural selection," the four-level (union republic ministry--republic ministry--construction trust--primary contracting construction organization) diagram of the management of capital construction has become most widespread. However, it does not completely meet the present requirements and needs improvement.

The 25th CPSU Congress charged the corresponding organizations to draw up new diagrams of the management of capital construction and to introduce them gradually in all the ministries and departments which carry out construction. The mentioned decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 required of the ministries and departments, which have construction organizations, that they change over by 1981 to two-level or three-level diagrams of the management of construction.

For the fulfillment of this decision it was first of all proposed to set up in each interested department large territorial and all-union production construction and installation associations and, where this is necessary, trusts, which should become the basic cost accounting unit in construction.

About 160 production construction and installation associations have been set up in the country. They account for only a little more than 10 percent of the total amount of contracting operations, although, as the first results of their activity show, in case of such a system of the management of construction work its efficiency increases significantly.

The interests of social development require the sharp increase of the efficiency of capital construction, and one of the means here is the utmost acceleration of the work on the changeover of construction to new diagrams of management. This work has to be completed, of course, with allowance made for the peculiarities of today. In particular, it is necessary to set up such primary production construction and installation associations which would be able to carry out the entire construction cycle from start to finish.

There is no need to speak about the importance of plan and evaluation indicators in the sector--it is enormous. Many shortcomings in capital construction are explained precisely by the imperfection of the system of indicators. Until the adoption of the decree of 12 July 1979 the so-called gross indicators (the planned amounts of capital investments and construction and installation work) were the criterion of the evaluation of the fulfillment of the plan assignments. The work of construction workers was evaluated and the amounts of the wage fund and the economic stimulation fund were established subject to the fulfillment of these indicators. This had the result that the plan on the amount of capital investments was fulfilled, while the plan on the placement of production capacities and other projects into operation was not always fulfilled.

We Recommend That a Note Be Made

In 1982 the number of contracting brigades in construction came to 88,000. This is 42.7 percent of the total number of brigades which work in the sector.

Whereas in 1975 there were 83 workers per million rubles of performed construction and installation work, in 1980 their number had decreased to 73, while in 1982 it had decreased to 69.

As is known, the following indicators are now established by contracting organizations: the placement of production capacities and facilities into operation; the increase of capacities by means of the retooling and renovation of operating enterprises; the total amount of the commodity construction product and the amount performed on its own, with a breakdown of the total amount by clients; the limit of the number of workers and employees; the total wage fund; the profit (and, for individual organizations, the decrease of the cost of construction and installation work); the assignments on the introduction of new equipment; the volume of deliveries of materials, machinery and devices, which are necessary for the fulfillment of the plans.

Moreover, the payments to the state budget and the allocations from it are included in the plan of construction and installation and specialized organizations. Starting in 1984 in conformity with the decree of the CPSU Central Committee "On Steps on the Assurance of the Fulfillment of the Plans of the Construction of Apartment Houses and Social Facilities" assignments on the placement of apartment houses and social facilities into operation will be established for the construction ministries in the plans of contracting operations.

The introduction in the practice of construction of the new system of indicators is, undoubtedly, a positive fact. A larger portion of the new indicators have already been put into use, but the last, decisive step has not been taken: the direct dependence between the material reward of the construction workers, the supply of construction projects and the fulfillment of the volumetric value indicators of the plan has not been eliminated. Therefore, there has remained up to now the possibility of the occurrence of a situation, when the participants in construction, first of all the contracting organizations, strive first of all to fulfill the plan assignments on the volumetric value indicators, since the wage of the workers directly depends on the value amount of the

construction and installation work. The complete supply of construction projects with material and technical resources and the amounts of working capital and credits also depend on the amount of this work.

Of course, this also affects such an important proportion as the ratio of the growth rates of labor productivity and the wage. For a number of years now the plans on labor productivity in the sector have not been fulfilled, the wage has been increasing steadily. The restoration of the normal ratio between the growth rate of labor productivity and the increase of wages directly depends on the speeding up of the work on the introduction in capital construction of the system of indicators which are envisaged by the decree of 12 July 1979. These indicators characterize more objectively the labor productivity in construction and establish a stricter interdependence between the growth rates of labor productivity and wages.

The improvement of cost accounting, of course, also contributes to the improvement of the work of the sector. Unfortunately, the instances, when the cost accounting interest of the different participants in the construction cycle does not coincide, are still frequent. This is explained by the fact that the steps being taken in this area affect mainly the general contracting organization. It practically does not affect the other participants in construction (planning and surveying, subcontracting, scientific and procurement organizations and services of the client), which, of course, adversely affects the end results of the construction work and leads to the dragging out of the periods of the designing, construction and assimilation of projects and to the worsening of the quality of the work.

The Law on Labor Collectives should have a substantial influence on the effectiveness of the levers of cost accounting in capital construction. The use in economic practice of the provisions of the law enables each collective to use more thoroughly, purposefully and effectively moral and material stimuli in production, as well as to step up even more the participation of the workers in its management.

The implementation of the provisions of the decree of the CPSU Central Committee, the USSR Council of Ministers and the All-Union Central Council of Trade Unions "On the Intensification of the Work on the Tightening Up of Socialist Labor Discipline" and the decree of the USSR Council of Ministers and the All-Union Central Council of Trade Unions "On Additional Steps on the Tightening Up of Labor Discipline" is of great importance for the improvement of affairs in capital construction.

It is well known that the acceleration of the rate of construction and the increase of its quality to a significant extent depend on the interaction of this sector with financial organs. The USSR Ministry of Finance, the USSR State Bank and the All-Union Bank for Financing Capital Investments specify the sources of assets for capital investments and ensure their timely receipt and the monitoring of proper use, thereby having a substantial influence on the progress of capital construction and its efficiency.

Today the financial organs have great powers. They monitor the economic activity of construction organizations and keep track of the availability and use of

resources and planning estimates at each project being built, the condition and utilization of the capacities of all the participants in the building of new projects. The dates and quality of the performance of construction and installation and other operations, the payment for them not only at each stage of the construction cycle (designing, complete supply, construction and assimilation), but also the end result of all the construction work are under their control.

By monitoring the process of construction as a whole and by its stages, the financial organs accumulate extensive information on the state of affairs not only at each construction project, but also in each sector and in the national economy as a whole, which enables the interested organizations to influence the progress of construction in good time, efficiently and effectively. So that this influence would be more thorough and effective, it is necessary, in our opinion, to settle a number of questions, which would yield an appreciable result in the soonest time. It is a question first of all of changing the guidelines when specifying the sources of financing of capital construction.

It is well known that the enterprises', ministries' and departments' own assets, assets of the state budget and credits of banks are the sources of investments. Now in the total amount of capital investments the enterprises' and departments' own assets account for about 49 percent, the allocations from the state budget come to approximately 40 percent, credits account for something on the order of 8 percent.

The fact that a larger portion of the construction projects is being financed by means of the enterprises' and departments' own assets, is an encouraging phenomenon. In this case the organization, which is carrying out the construction, is completely interested in the economical expenditures of the assets which are being released for these purposes and in the high quality performance of the work in the set time, and, if this is possible, ahead of time.

The interest of enterprises and organizations in the use of this source of financing of capital construction depends first of all on the norms of the accumulation of their own assets, which have been properly selected for them. These norms, first, should stimulate enterprises and organizations to work intensively for the accumulation of their own assets for the needs of construction. Second, they should increase the attention of the managers of capital investments to the economical and efficient expenditure of these assets.

If the enterprises and organizations do not have or do not have enough assets for new construction, renovation and the modernization of production, the lacking amount can be allocated, on the condition of return, either from the state budget or in the form of bank credits.

In case of the state financing of capital construction, when assets are allocated not from the client departments' own assets, as practical experience shows, the recipients of the investments are not always economically interested in their efficient, effective use and in the speeding up of the construction time.

It is necessary for the organs of the USSR Ministry of Finance, which are in charge of these allocations, to strictly monitor their expenditures. For the present the proper monitoring of these assets on the part of the banks also does not exist, in case of the state financing of capital investments their role reduces to purely intermediary functions. They only carry out the payment authorizations of the USSR Ministry of Finance and interested ministries and departments. Obviously, it is necessary to decrease the share of state investments in the total amount of capital investments to the necessary minimum. The assets from the state budget should be channeled only into the financing of the construction of housing, cultural and personal service facilities, as well as individual especially important national economic construction projects.

Bank credit merits special discussion. In our opinion, the use of such credit on a larger scale affords additional opportunities for the improvement of affairs in capital construction and for the increase of the efficiency of this most important sector of the national economy. When granting credit to one organization or another, which is participating in construction, the banks are economically interested in the proper, efficient use of these assets, since they have the opportunity with time to obtain from those receiving the credit not only the owed sum, but also interest on it. Hence, too, the strict, interested monitoring of the entire construction cycle. The banks monitor in this case the progress of the designing, complete supply, building and assimilation of the project for which credit is being extended by them.

Two types of credits: long-term and short-term, are now being used in capital construction. Short-term credits have become most widespread (although in construction they are also being used less often than in industry and agriculture). Although long-term lending does not yet have proper recognition in the sector, it seems that it has a great future and with time it will become the main source of the financing of capital construction.

The fact that the use of long-term credits will contribute to the solution of a number of urgent problems, particularly the elimination of the dispersal of assets and resources among numerous construction projects, serves as the basis for such an assertion. The participants in construction, who have received such credit, are economically interested in the concentration of assets at a smaller number of projects. For the more rapidly these projects are put into operation, the earlier the general contractor will receive the payment for the performed work from the client and, consequently, the credit will be repaid by him and the planned profit and the material reward will be received.

The results of the experiment, which was conducted during the 10th Five-Year Plan by the Belorussian SSR Ministry of Industrial Construction, are practical confirmation of the effectiveness of and, thus, the need for the more extensive dissemination of long-term lending. During the period of the experiment, when long-term credit was used as the basic source of financing of construction, the time of construction of projects in the republic was shortened by 13 percent, while for construction projects for production purposes it was shortened by 17 percent. As compared with the 9th Five-Year Plan the number of projects turned over to clients increased by 37 percent and 750,000 m² more housing were put into operation. At the same time the quality of the work improved.

Construction by means of credits of banks with the turning over of projects "turnkey" is also very promising. As the experience of the enterprises of the USSR Ministry of Construction, the USSR Ministry of Rural Construction, as well as several socialist countries shows, in addition to shortening the time of designing and construction, this method makes it possible to improve the quality of the work being performed, increases the responsibility of the client and the general contractor for the results of their activity and significantly increases the influence of the latter on the other participants in the construction.

The utmost increase of the efficiency of the use of the credit system in capital construction is also an important task. Reserves exist for this. And significant ones. In our opinion, the increase of the responsibility for the work being performed of all the participants in the construction is of great importance here.

Unfortunately, the penalties of the banks in case of the violation of the terms of lending do not always affect those who are really to blame. As a rule, at present only the construction and installation organizations, the general suppliers and the design organizations bear responsibility for the violation of the terms of lending, the other participants in the construction either are not at all responsible for this or bear negligible responsibility. Therefore, frequently only the general contractor bears material liability to the bank for the poor work of, for example, transportation workers, machine operators, clients or related industries.

Under present conditions the financial and credit mechanism should be "adjusted" without fail so that the specific guilty parties would bear full responsibility for the upsetting of the standard periods and the low quality of work. Financial organs have sufficiently broad powers for the monitoring of the economic activity of the participants in construction. They should also have the opportunity to stimulate the work of the organizations under control. But this is one aspect of the matter. The rights and possibilities should be coordinated without fail with the responsibility of the financiers for the soundness of their actions, which is not always observed in practice. Instances when, for example, the banks without sufficiently significant reasons deny credits to the organizations participating in construction and halt financing, still occur.

The solution of this problem is seen in the changeover of banks to self-sufficiency. This step, undoubtedly, will increase the responsibility of the banks for the functions performed by them, will tighten up performer discipline and will change the style of their work. The changeover to self-sufficiency will stimulate the banks to actively seek receivers of credits and will prompt them to go more thoroughly into the different aspects of the production activity of those to whom credit is being extended.

It was noted above that the banks as a result of their activity accumulate extensive and diverse information. Information of this sort is necessary, in particular, when drafting the plans of capital construction. The effectiveness of the use of such information is confirmed by the experience, for example, of Saratov Oblast, where a comprehensive system of control of the efficiency

of capital investment was set up with the active participation of the oblast committee of the CPSU. The enlistment of financial organs in the planning of capital construction yielded here a very appreciable result.

Here, of course, the right of the decisive voice should be reserved for our planning organs. It is necessary to listen most attentively to the opinion of financiers, which is based on the analysis of extensive and diverse information. Such a procedure of the drafting of the plans of capital construction, first, will ensure their greater soundness and stability and, second, will promote the stricter monitoring of their high quality fulfillment and will make it possible to a significant extent to eliminate from practice the cases, which are being encountered to this day, of the lodging by financial organs of complaints against the already approved plans.

In conclusion I would like to stress the importance of the improvement of management, planning in the sector, its economic mechanism, the improvement of educational work and the increase of the responsibility of each construction worker for the results of his activity. The efforts of party organizations and propagandists should be aimed at the utmost mobilization of the communists and all the workers of the sector for the fulfillment of the measures being outlined on the improvement of affairs in construction and at the monitoring of the progress of the implementation of the adopted decisions.

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CONSTRUCTION PLANNING AND ECONOMICS

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PROBLEMS IN SHIFTING EMPHASIS FROM NEW BUILDING TO RENOVATION

Moscow EKONOMIKA STROITEL'STVA in Russian No 2, Feb 84 pp 13-17

[Article by Candidate of Technical Sciences A. A. Svetlikov: "Renovation Is the Most Important Factor In Increasing the Efficiency of Capital Investments"]

[Text] The June 1983 Plenum of the CPSU Central Committee defined the most important tasks confronting our country in the matter of increasing the efficiency of socialist production. The selection of more efficient ways, which lead to the best final national economic result with the least costs, is the main direction for implementing these tasks. The optimum allocation, efficient utilization and maximum yield of capital investments serve here as decisive factors.

First of all, the problem of optimal allocation of capital costs consists of improving their industrial and reproductive structure. The industrial structure describes the relationship of costs for construction and installation operations and equipment in over-all volume of capital investments. As is generally known, its improvement is determined by increasing the share of resources being directed towards reproduction of the credit portion of fixed production capital. This is explained by the fact that improvement of the credit portion of assets (that is to say, machinery and equipment) directly influences an increase in production efficiency. The debit portion of assets (buildings and structures) only creates conditions for the normal functioning of machinery and equipment. Other things being equal, an increase in the share of the latter in over-all volume of capital investments enables one to increase cost efficiency as a consequence of reducing their proportionate quantity per unit of capacity. In addition, an increase in the share of resources being directed towards developing the credit portion of assets causes a decrease in the production cost of a production unit by virtue of decreasing a proportionate quantity of amortization allowances.

A number of factors, which can be consolidated into the following basic groups, have an influence on shaping the industrial structure of capital investments:

The level of scientific and technical progress;

An alteration of the norms of industrial planning;

Social and economic factors; and

An alteration of the reproductive structure of capital investments.

Selected surveys are indicative of the fact that the relative share of each of the factors in over-all increase of costs for machinery and equipment is practically the same, for example, in many enterprises of the construction industry. A 35 percent increase in these costs is associated with the factor of raising the level of mechanizing and automating production--the introduction of computers is 30 percent and the incorporation of equipment of the newest achievements of science and engineering in production technology is 70 percent. Fire prevention and measures which provide industrial safety are often the factors which determine the reduction in share of costs for machinery and equipment. The "negative" influence of these factors in the over-all increase in costs for machinery and equipment is 30-35 percent.

This is indicative of the fact that, when planning capital investments on the basis of analyzing the data of planning estimates, the most accurate accounting of the indicated factors is necessary, and that makes it possible, to a certain degree, to improve the industrial structure of capital costs and, consequently, to increase their efficiency. However, according to our convictions, the task of improving the industrial structure of capital investments by virtue of increasing the relative share of costs for equipment must not become an end in itself, so long as an increase in the efficiency of capital investments presupposes the establishment of economically expedient limits of reducing costs for construction and installation operations.

Their reproductive structure, which is being determined by the correlation of costs for the construction of new enterprises and the expansion, renovation and retooling of the operating ones, is directly influencing the industrial structure of capital investments.

For many years, new construction, which was explained as a relatively poor development of productive forces, was considered the main condition of scientific and technical progress. At the present time, when enormous industrial potential has been created, science and technology are being developed at high rates, and the question of the priority direction of material and financial resources for renovating and retooling operational production is being put on the agenda. The necessity for a planning orientation of this kind was emphasized more than once in decisions of the party and the government on matters of improving the economic mechanism.

First of all, it is explained by a number of advantages of the renovation and retooling of operational enterprises in comparison with new construction. For example, as a result of renovation, production capacities are being assimilated more rapidly, there is no necessity for building residential settlements and the industrial structure of capital investments is improving, so long as the opportunity occurs to put great emphasis on improving machinery and equipment. Costs for construction and installation operations are being reduced by virtue of optimum utilization of available buildings, structures, transportation routes and projects for servicing purposes.

It should be noted as well that relatively high efficiency, in comparison with new construction, of renovation operations are being achieved owing to the possibility of utilizing the available skilled labor force and as a result of reducing over-all plant and administrative expenditures, so long as the expansion

of production during renovation is not accompanied by an increase in the work force of ITR [engineering and technical personnel] and employees. And, perhaps, the basic advantage of renovation is the short break in the time between investing the resources and obtaining the effect, that is to say, a comparatively rapid yield of capital investments. Directing resources towards renovation and retooling of operational enterprises creates resources of supplementary net output and profit that are a source for financing long-term scientific and technical programs. Undoubtedly, such a factor as the depreciation of operating fixed capital, and in connection with this too the necessity for their timely replacement, also plays no small role.

All of this is indicative of the fact that orientation of the economic mechanism towards renovation and retooling is not a temporary change in the approach to planning capital investments, but is an investment policy course calculated for the long term.

Meanwhile, as practice indicates, renovation and retooling of operational enterprises do not always justify those resources which are being invested in them. Moreover, the poor effectiveness of such measures is explained by both objective and subjective reasons. Therefore, analyzing reasons of this kind and working out practical recommendations, which in our opinion will make it possible to increase the efficiency of utilizing capital investments, are important. This problem is of particular interest to the construction industry, empirical and experimental enterprises and production base plants, so long as they by themselves feel the necessity for renovation and retooling and at the same time, while being an important factor for creating capital, they determine the efficiency of costs for such measures in other sectors of the national economy. It is a fact that the economic mechanism as a consequence of its "time lag," and which is basically aimed at solving problems of new construction, is a shortcoming in the current practice of planning. Operations for renovating and retooling operational enterprises still remain unprofitable for contract construction organizations, so long as the results of the production and economic activities of these organizations become worse when performing them.

For example, high labor-intensiveness often reduces the effectiveness of renovation operations and, consequently, the cost of construction and installation operations during renovation in comparison with new construction. This is explained particularly by the fact that standard plans are used on considerably smaller scales when conducting operations of this kind, and as a result of which the level of prefabricated and mechanized construction is reduced. In principle it is possible to use standard plans during construction of new building wings and other projects on the old premises of enterprises, however, there are a number of obstacles here. They are contained in the characteristics of planning the premises of enterprises and the location of underground mains, which does not allow utilizing large construction machinery, and that forces the construction of projects with deviations from the standard plans with the aim of providing for access to the underground mains.

The renovation of operational enterprises is usually conducted without a halt in production and that entails equipment downtime at the enterprises being renovated, as well as restricting the maneuverability of highly productive construction equipment. A consequence of this is the putting of production capacities

in operation in an untimely manner, and as a result of which the enterprises are in a state of "permanent" renovation over the course of many years, as well as the obsolescence of the renovation plans.

This is indicative of the fact that it is necessary to work out both economic and organizational measures which would make it possible to equalize the working conditions of the construction organizations at new construction projects and during the renovation of operational enterprises. But not only that. It is necessary to cause the construction organizations to take an interest in performing these operations in an intensified manner.

A number of such measures was stipulated by the decree of the CPSU Central Committee and the USSR Council of Ministers on 12 July 1979 concerning improvement of the economic mechanism, and to which the application of correction factors to current estimated norms for construction and installation operations, norms for overhead expenses, and the length of operations when determining costs for the renovation and retooling of operational production pertains. However, four years later after the mentioned decree had appeared, one has to state that all tasks posed in it still are not being completely resolved. Although various correction factors for renovation operations have found application in construction practice (for example, rising factors for workers' wages and operating costs of construction machinery for particularly constrained conditions, factors, increasing sums of direct costs in comparison with operating estimates, and others), they still are not fully promoting the reorientation of contract construction organizations for renovation operations. For example, the stated factors do not cover the additional costs of organizations, so long as they do not consider such factors as additional labor costs for performing individual operations, losses of working time, the constraint of working places in conjunction with high air temperature and other specific conditions of work production. A considerable excess of the labor-intensiveness of a construction output unit in comparison with a standard one is often a consequence of this.

The shortcomings of planning estimates reduce the efficiency of renovation operations to a considerable degree. One can attribute to them the weak technical and economic justification of specified renovation operations, the absence of a comparison with the achievements of foreign and domestic practice, an inadequate level of mechanizing and automating the industrial processes of production being renovated, a low shift system factor, as well as errors in determining the estimated cost of operations.

Cases are frequent when, at the time of technical and economic justification, renovation and retooling plans are compared with arbitrarily selected enterprises which are not standard, and this leads to their groundless inclusion in title lists of renovation projects. It should be noted that the technical and economic indicators of plans are not evaluated for the long term, that is to say, at the moment of putting the renovation project in operation, and this only creates a semblance of the plan's progressiveness.

At the present time, dozens of planning and design organizations which create technical specification for renovation operations are developing their original plans, and that entails serious difficulties when performing operations of this

kind. Therefore, in our opinion, the creation of advanced organizations which would coordinate the development of renovation plans on a sector scale must become a necessary measure.

The procedure for stimulating planning organizations also needs improvement. Right now it is not aimed at achieving high final results, since it basically depends on the volume of costs for planning. As a rule, this means that, when evaluating the activities of planning organizations, the economic efficiency of plans developed and implemented by it are not taken into consideration.

Difficulties in the material and technical supply of renovation projects are a consequence of shortcomings in the business of planning. While not having precise data on the products list of materials because of the absence of technical specifications, the supply organs issue approximate orders which are subsequently corrected time and again. In turn, this leads either to the formation of unconvertible stocks or to the rise of an artificial deficit, as well as causing alterations in production plans among suppliers. In addition, the requirement for building materials, building structures and components is usually determined in calculating per 1 million rubles of estimated cost of construction and installation operations, and, in our view, this is unacceptable for renovation operations. The material and technical supply of these projects must be based directly and first and foremost on the planning estimates.

The transition of construction to a technical supply system with centralized delivery to the construction site of material resources prepared for immediate installation and utilization must become as well one of the ways to solve the problem of improving the provision of construction projects with material and technical resources. The centralization of functions associated with the system for supplying building structures and materials to renovation projects is an urgent necessity in this plan. In addition, with a view to increasing responsibility for quality and delivery deadlines, a settlement procedure ought to be introduced between clients and contractors for equipment which is completely fitted out and installed by the supplier plants. Moreover, in this case the supplier must not receive payment for the equipment at the moment of shipment, but after it is put in operation and reaches its planned capacity. In our opinion, measures such as these would raise the quality of renovation operations to a certain degree, and, consequently, the efficiency of capital investments being directed towards capital replacement.

At the same time, as was already stated, the renovation of enterprises is turning out to be less efficient in comparison with new construction for a number of objective reasons. For example, an analysis of the fixed capital condition of construction industry enterprises showed that renovating them requires comparatively large costs for construction and installation operations, since a considerable portion of the sector's enterprises are situated in obsolete buildings. It is practically impossible to use mechanized transportation in them, and the ventilation units, illumination intensity and everyday accommodations do not meet modern requirements. The building structures do not permit the installation of large equipment without considerable expansion of the production areas. Warehousing accommodations, cleaning facilities, sewerage and other underground services are often absent (or are in an unserviceable condition) at the sector's enterprises.

As a result, operations for the fixed capital replacement of operational enterprises often turn out to be inefficient without considerable expansion of the production areas and construction of new buildings. A situation such as this is partly a consequence of the fact that their future renovation was not envisaged at the proper time during the planning and construction of industrial enterprises.

It should be noted as well that, besides accomplishing measures for further increasing the output of products by virtue of renovating and retooling operational enterprises, new construction obviously will maintain its importance today and in the future. This is caused both by the foregoing situation and the necessity for creating in the construction industry of enterprises, for example, new kinds of production of structural aluminum, light metal, asbestos-cement, plywood and other structures, as well as by the shifts of enterprises and construction projects to the sparsely inhabited and undeveloped regions of the country's north and east.

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HOUSING CONSTRUCTION

DEPUTY MINISTER OF JUSTICE COMMENTS ON RSFSR HOUSING CODE

Moscow KHOZYAYSTVO I PRAVO in Russian No 9, Sep 83 pp 56-59

[Article by M. A. Shapkin, RSFSR deputy minister of justice, commenting on the RSFSR Housing Code adopted 24 June 1983]

[Text] First a few figures. It is well known that even in the first 10 years of Soviet power the housing that was built amounted to 200 million square meters of floor space, and over the period of 60 some years it was 3.5 billion square meters. In RSFSR at the present time, for example, housing is being opened to tenancy every year in the amount of 60 million square meters of floor space. About 80 percent of urban inhabitants have separate apartments. It remains to be added to what we have said that we have the lowest rent; it does not average higher than 3 percent of the income of families of workers and employees.

At the same time, as Comrade Yu. V. Andropov, general secretary of the CPSU Central Committee, emphasized at the June (1983) Plenum of the CPSU Central Committee, the housing problem is still acute for many people.

The Housing Code has great importance as the package of legal norms directed on the one hand toward guaranteeing the rights of citizens to housing and on the other toward efficient use and preservation of the housing stock, so as to guarantee balance between the rights and duties of citizens. That is why there was broad public interest in the work to prepare the draft of the new piece of legislation. Its first version, which was drafted by the RSFSR Ministry of Justice jointly with the republic's Ministry of Housing and Municipal Economy, with help from other state organizations, was taken under consideration by all councils of ministers of autonomous republics and by ispolkoms of kray and oblast soviets of people's deputies, and has been discussed in assemblies of work collectives and meetings of scientific councils of a number of institutes. In all, more than 500 remarks and proposals were received, and deputies of the RSFSR Supreme Soviet made more than 200 additions. The proposals and remarks were thoroughly examined in meetings of the standing commissions for legislative bills and for housing and municipal economy and consumer services of the republic's Supreme Soviet, and a substantial number of them were honored.

Legal Foundation and Format of the Housing Code. The Bases of Housing Legislation of the USSR and Union Republics served as its principal component. Full use was also made of the norms of the RSFSR Civil Code regulating the rental of living space which have been verified in practice and of other norms of legislation in effect which have justified themselves in practice and cover this sphere of social relations. In addition, the code has incorporated important new solutions concerning a number of problems in housing law. It consists of 7 sections and 158 articles systematically setting forth the norms regulating management of the housing stock, the supply of housing to citizens, the use of housing space of various categories (state, public and private housing stocks, official housing space, dormitories, and so on), measures aimed at the preservation of housing, liability for violation of law, and the procedure for settlement of housing disputes.

The code has incorporated all the revisions contained in the Bases of Housing Legislation, such as elaboration of the principle of permanent use of housing space, the equal right of all individuals to obtain housing in buildings belonging to the state and public stock, reduction of cases of eviction without supplying housing, and so on (all of which has become the rule since 1981). These provisions were not simply taken over into the code, but in many cases were developed further.

Allocation of Housing. The legislation has reinforced the grounds on which individuals are recognized to be in need of improved housing. These are persons whose floor space per member of the family is below a level set by the councils of ministers of the autonomous republics and by kray and oblast ispolkoms; persons living in housing that does not meet the established public health and technical requirements; certain cases related to people living in so-called communal apartments and dormitories and subletting. It defines the basic principles for recognizing people's needs for improved housing, for entry on the rolls and the procedure for removal from the rolls. The fundamental principle has been adopted to the effect that housing space shall be allocated in an order of priority based on the time when individuals qualify for enrollment and when they are placed on lists to obtain housing.

At the same time the code has incorporated the norm which has legislatively reinforced the right to move someone down on the waiting list for housing. It has been established that individuals on the waiting list by their place of work may be moved down on the list by the management of the enterprise, institution or organization with consent of the trade union committee for a willful breach of work discipline, drunkenness, rowdiness, petty larceny of state or public property, and other breaches in the cases envisaged by USSR and RSFSR legislation.

It is well known that the Bases of Labor Legislation introduced the rule of housing allocation out of turn and on a priority basis. The code has reiterated these norms. Aside from individuals whose housing has been made unsuitable for occupancy by a natural disaster, others who are to receive housing out of turn include persons returning from state children's institutions, from relatives, guardians and foster parents where they have been training, if it is not possible to restore them the housing they left when they went to

the children's institution, to guardians or to foster parents. The bases have been developed in the sense of including mothers with three or more children among mothers with many children who are entitled to obtain housing on a priority basis.

The Standard of Adequate Housing. Instead of the standard of 9 square meters per person which was previously in effect in the republic, the present standard is 12 square meters. It has moreover been provided that housing shall be allocated to individuals up to this standard, but not less than the proportion established according to a procedure defined by the RSFSR Council of Ministers.

The important role of the community in the distribution of housing is reflected in the law. It is provided that the keeping of records on individuals in need of improved housing, establishment of the order of priority for housing, and also the distribution of housing in buildings belonging to the state and public housing stock are under public control and are subject to public scrutiny.

Use of Housing. The main orientation of those innovations provided for on this topic are the further improvement of the housing conditions of Soviet citizens. When new housing is being allocated, provision is made for housing units to be occupied as a rule family by family. If a room becomes vacant in an apartment and is not isolated from the space occupied by another renter, it is subject to transfer to his use. Housing space which becomes vacant in an apartment in which there are several renters must be allocated to the other tenants who are in need of improved housing or who have housing space below the established standard per person. Emphasizing the norm which is now in effect concerning equal rights and duties of family members of the lessee, the code has broadened the number of persons who can be recognized as members of the lessee's family. Aside from relatives and dependents unable to work, in exceptional cases other persons may also be included among members of the family if they live with the lessee and share the same household with him. The code has standardized the disparate norms now in effect concerning the conditions and procedure for preserving housing for persons during temporary absence and has given a clear-cut list of cases when and for what period housing space shall be kept for the lessee and members of his family. In addition to the rules which are now in effect, it has been established that housing shall also be preserved for a period of more than 6 months in the following cases: when reserve commissioned officers are called up for active military service for a period up to 3 years--for the period that service lasts; and for persons serving in the military as warrant officers and extended-service military personnel--for the first 5 years. In addition, housing shall be kept for the entire period of absence related to performing the duties of a guardian (foster parent) in cases when they have been placed in alcoholic rehabilitation centers, and certain other cases.

The rules for exchange and subletting of housing have been revised and elaborated in more detail. For instance, aside from the rules previously in effect, the law has stressed that exchange is not permitted if it is done for gain; if the dwelling is to undergo major repairs involving reconstruction

and a change of the layout; if the exchange involves an essential worsening of the housing conditions for one of the parties to the exchange to the point where an individual qualifies as in need of improved housing. The conditions for subletting housing have also been regulated more strictly. It is not permitted to sublet housing if the subtenant's moving in reduces the amount of housing per tenant below the established standard; if persons suffering from serious forms of chronic illnesses live in the housing, and in a number of other cases.

The section devoted to regulation of cancellation of a lease and eviction has taken over in toto the standards of the Bases of Housing Legislation. They considerably reduce the cases of eviction when housing is not furnished, and a consistent line has been pursued in judicial procedure for forcible eviction. As is well known, the requirements of the bases distinguish cases of eviction when fully equipped housing is to be provided and those in which simply alternative housing is provided. In this connection the code has incorporated the criteria distinguishing between these concepts. Thus well-equipped housing (relative to the conditions of the given settlement) must meet the established public health and technical requirements, must be within the city limits and must at least equal the space occupied in size. If the lessee has occupied a separate apartment or more than one room, he must correspondingly be allocated a separate apartment or housing space consisting of the same number of rooms. Except for spouses, persons of different sex over the age of 9 are not allowed to occupy the same room. If the lessee has had excess living space, space shall be provided at least up to the established standard per person (12 square meters), and in the case of a lessee or members of his family entitled to additional space and actually using it, the standard shall be met concerning additional space. By contrast with well-equipped housing, other housing must meet the established public health and technical requirements and must be within the city limits, or in a rural locality, when the eviction is from dwellings of kolkhozes and sovkhoses--it must be within the jurisdiction of the settlement (village) soviet or within the boundaries of the farm of the kolkhoz or sovkhov located in the jurisdictions of several settlement or village soviets.

Housing Construction Cooperatives and the Private Housing Stock. Several important problems in the activity of housing construction cooperatives has been regulated legislatively. The procedure has been defined for keeping records of individuals who want to become members of a housing construction cooperative and the conditions of their enrollment, the same criterion of the need for improved housing has been established as for obtaining housing in buildings of the state or public housing stock. Legislation has regulated for the first time the questions of exchange and division of housing space in the building of a housing construction cooperative, and the grounds have been defined for expulsion from a housing construction cooperative. It has been provided that the bylaws of the housing construction cooperative may also establish other cases of expulsion. The principles of the bases have been taken over to the effect that the state shall provide assistance to housing construction cooperatives in management and repair of the buildings which belong to them and also in providing housing to members of the housing construction cooperative while major repairs are being done, when the repairs

cannot be done without moving out the tenants of those buildings. It has been established that when a building belonging to a housing construction cooperative is demolished because a plot of land is being confiscated from it for state or public needs, an equivalent residential building shall be turned over to the ownership of the cooperative to replace the dwelling that has been demolished.

The code contains new provisions on the problems of use of residential buildings privately owned by individuals: a norm has been set forth concerning the rights of the family members of the owner of the dwelling, concerning his duties to ensure preservation of the building; concerning the help of the state in repairing and improving dwellings which belong to individuals. The bases solved in a new way the problem of compensating individuals for demolition of their dwelling when their land is taken over for state or public purposes, and this has been reflected in the code. In addition to allocation of apartments in the buildings of the state or public housing stock, owners of dwellings are paid the value of the dwelling demolished. Dwellings and structures to be demolished may be removed, and in the cases set forth by the RSFSR Council of Ministers it is also permissible to build dwellings, structures and installations on a new site for individuals whose dwellings are to be demolished.

Management and Preservation of the Housing Stock. The sound regulation of the problems that have to do with management of the housing stock and ensuring that it is preserved and repaired is a distinctive feature of the new law. They have been given two independent sections which designate the bodies which are to manage the state and public housing stock, make provision for participation of public organizations and individuals in this matter, and state the basic functions of housing management organizations. To be specific, these organizations are assigned the duty of ensuring the preservation and proper use of housing. It is emphasized that the management and repair of the state and public housing stock and also of the stock of housing construction cooperatives must meet the uniform rules and standards for management and repair. The code also contains general rules concerning the planning of major repairs of the housing stock, financing outlays for its management and repairs, and material and technical supply for management and repair. While regulating the rights of individuals in detail, the code also aims at strict fulfillment of duties by individuals, and above all at use of housing for the designated purpose. Provision is made for confiscation of housing if the lessee regularly sublets it in order to derive income not based on work. In the interests of ensuring the preservation of the housing stock and its proper use the code furnishes a detailed list of breaches of housing legislation which can result in criminal, administrative or other liability envisaged by law.

It should not be supposed that adoption of the RSFSR Housing Code has brought to an end the work of systematizing legislation in this field. There are a sizable number of norms in it which contain orders to administrative authorities at various levels concerning further and more detailed regulation of particular provisions of housing legislation. To be specific, the RSFSR Council of Ministers has been ordered to issue the Standard Housing Lease, rules

governing the use of housing and maintenance of dwelling and grounds; the Standard Regulation on the Housing Management Organization; the model rules for enrollment of individuals who need improved housing; the model bylaws of the housing construction cooperative; and to define the procedure for establishing the amount of housing to be allocated to individuals and to draft a number of other normative acts. This is in fact the direction to be taken in further development and improvement of republic housing legislation.

Very little time is left before the RSFSR Housing Code and housing codes of the other union republics take effect. In view of the great public importance of this piece of legislation and the lively interest in it by urban and rural workers, it would be the proper thing for all lawyers, regardless of the area in which they are employed, to study thoroughly the new housing law and to carry on an effort toward widespread clarification and toward accurate and unswerving enforcement of its requirements.

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CONSTRUCTION MACHINERY AND EQUIPMENT

MORE EFFECTIVE USE OF CONSTRUCTION MACHINERY ADVOCATED

Moscow NA STROYKAKH ROSSII in Russian No 2, Feb 83 pp 30-32

[Article by V. Morozov, chief of the Production Planning Department of Mechanization Administration No 10 of Mosoblstroymekhanizatsiya Trust No 2 of the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee: "The Improvement of the Organizational Forms of the Management of the Mechanization of Construction"]

[Text] The need for the further improvement of the management of construction work is making increased demands on the choice and use of efficient organizational forms of the management of the fleet of construction machines.

At present the level of mechanization determines the nature of the technological processes of construction and thereby has an influence on its time and the cost of construction and installation work.

As the supply of construction organizations with various devices increases, the expenditures on their production and technological operation increase. These expenditures, for example, in 1980 for the country as a whole came to about 12 percent of the actual cost of the performed work, while in the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee they came to 9.2 percent.

The total value of the fleet of machines, which the construction organizations of the main administration have at their disposal, increased in 1980 as compared with 1965 by fourfold and came to more than 30 percent of the fixed capital for construction purposes.

However, as the actual data show, this increase did not properly improve the technical and economic indicators of the production operations of the contracting organizations. Thus, in 15 years labor productivity increased by only 1.5-fold, while the machine-worker ratio increased by 3.5-fold. The level of the output-machine ratio during this period, as for the country as a whole, decreased to nearly five-twelfths.

The increase of the effectiveness of the capital investments in the development of the fleet of machines in construction is directly connected with the implementation of a number of measures, among which the substantiation of an efficient organizational form of the management of means of mechanization is of the greatest importance.

The point is that at present in the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee, in spite of the high level of concentration of basic machines in specialized mechanization trusts (82 percent), their operation is being carried out by mobile mechanized columns and the mechanization administrations of general construction or specialized trusts. Moreover, a portion of the machines is found directly within construction organizations.

The basic causes of such a diversity of the organizational forms of the use of devices consist in the multifactor nature of the conditions of construction. On the other hand, these forms arose as a result of intuitive decisions, and their expedience in each specific case is inadequately sound. Therefore, for the proper choice of one organizational form or another of the management of means of mechanization the evaluation of the effectiveness of each of them is necessary.

Attempts to elaborate the methods and criteria of such an evaluation have been made both by individual authors and by collectives of scientific research institutes. However, in spite of the large number of theoretical works on this question, so far a method of evaluating the effectiveness of the organizational forms of the management of mechanization, which would make it possible to determining the influence of the improvement of the management of mechanization on the economic indicators of construction organization, has not been developed.

The logical proofs of the conceptions of the authors with reference to the advantages of the specialization and concentration of the maintenance and repair of machines are frequently a characteristic trait of the existing approaches.

Other authors proceed from the comparison of the expenditures on the operation of machines, which are governed by one organizational form or another.

Without dwelling in detail on these methods, let us indicate several drawbacks of them.

First, the conclusions and suggestions of the authors are based on the results of the comparison of individual technical and economic indicators of the use of machines. However, it should be pointed out that in practice it is impossible to ensure the comparability of the versions being compared due to the differences in the structure of the operations being performed and in the composition of the fleets of machines and their power.

Second, here only the change of the current expenditures, which are connected with the technical operation of the machines, is taken into account.

And in the end the amount of the decrease of the cost of operation of the machines, and not the economic indicators of the end results of construction worker, acts as the criterion.

It seems to us that the efficiency of the functioning of the organizational forms of the management of mechanization should be determined by comparing the versions subject to their influence on the cost of construction work.

Experience shows that the mechanization subdivisions, as a rule, fulfill the plan assignments; their economic activity is characterized by positive results.

In construction organizations the plan on the placement of facilities into operation with high economic indicators is not being fulfilled. Moreover, the expenditures connected with the use of machines are increasing.

Thus, the actual expenditures on the operation of machines in the contracting organizations of the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee in 1980 exceeded the planned expenditures by 2.4 million rubles, which led to the increase of the cost of work by 0.7 percent. Similar phenomena are occurring in the majority of construction ministries.

The influence of the organizational forms of the management of mechanization on the efficiency of construction work is determined mainly by the amounts of the expenditures on the mechanization of operations, which in turn are due to the structure of the fleet of machines, which corresponds to the structure of the operations being performed.

However, it is quite difficult to improve simultaneously the technical and economic indicators of the mechanization subdivisions and the construction organizations.

For the successful accomplishment of this task, in our opinion, it is important for there not to be a contradiction between the criteria of the efficiency of both.

The determination of the efficient organizational structure of the management of the fleet of machines is possible, if its optimality criterion corresponds to the criterion of the efficiency of construction work.

An impact of capital investments in one sector or another is achieved by the decrease of the level of current expenditures. Therefore, when posing the specific task of the choice of the best organizational form of the operation of machines one should find such a version, which provides the maximum intrasectorial impact or ensures the minimum adjusted expenditures on the given amount of construction and installation work.

In this case for the comparison of the versions it is proposed to use the indicator of the comparative economic efficiency, which is the minimum adjusted expenditures.

Here it is advisable to use a modified version of the adjusted expenditures, in which the expenditures on the operation of machines, which are reflected not by the mechanization administrations, but by the construction organizations in the cost of the performed amounts of construction and installation work, act as the cost.

These expenditures are added up not with the capital investments in the fleet of machines, but with a portion of the average annual value of the machines, which are engaged in the performance of work, and the repair and operating base, which is calculated with the standard coefficient of efficiency.

This sum pertains to the amount of construction and installation work which was performed by the contracting organizations' own forces, that is:

$$З_{у.п.} = \frac{P + (\Phi_{п.м.о.} + \Phi_{п.э.б.}) \times E_H}{Q} \rightarrow \min,$$

$З_{у.п.}$ is conditional adjusted expenditures in rubles per ruble of construction and installation work, which was performed by the contracting organization's own forces;

P is the expenditures on the operation of machines, which are reflected in "The Report on the Cost of the Performed Construction and Installation Work" (Φ -2c): at present the expenditures on the transportation of machines are included in these expenditures;

$\Phi_{п.м.о.}$ is the average annual value of the machines and equipment, which were used in the process of the performance of the work or were included in the balance sheet of the organization, thousands of rubles;

$\Phi_{п.э.б.}$ is the average annual value of the repair and operating base, thousands of rubles;

E_H is the standard coefficient of efficiency = 0.15;

Q is the amount of construction and installation work, which was performed by the contracting organization's own forces, thousands of rubles.

The economic expedience of one organizational form or another of the management of the fleet of machines in construction is characterized by its evaluation according to the indicator of the conditional adjusted expenditures.

On the basis of the actual data we made calculations of the conditional adjusted expenditures for the construction trusts of the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee under the conditions of different organizational forms of the management of the machine fleet, which are in effect.

These calculations show that the conditional adjusted expenditures in the construction trusts, which are served by the mechanization administrations which are a part of mechanization trusts, are half as great as in the construction trusts which have mechanization administrations on their own balance sheets, that is, the actual conditional adjusted expenditures for 1981 came respectively to 0.1 and 0.2 ruble.

And this means that the establishment in the main administration of a uniform organizational form of the management of the fleet of machines (the mechanization trusts) at just the four studied trusts (the Mosobl'sel'stroy Trusts No 11 and No 15, the Mosobl'spetsstroy Trusts No 3 and No 4), as the calculations show, will ensure a decrease of the annual expenditures on the operation of machines in the amount of 4.4 million rubles.

The difference in the amounts of the conditional adjusted expenditures is achieved, in particular, by the efficient shifting of the fleet of machines of the mechanization trusts.

In construction organizations a surplus of machines frequently appears--in one in case of their shortage in another, and, depending on this, the mechanization trusts redistribute the machines among the users, ensuring their proper utilization.

The situation is different, when the mechanization administrations are a part of construction trusts. Under these conditions, due to the lack of a work front, the machines, as a rule, stand idle.

Moreover, the performance by specialized trusts (the Mosoblspetsstroy Trusts No 3 and No 4) of construction and installation work in many rayons of the oblast with the use of "their own machines" leads to the unjustified increase of the expenditures which are connected with the shifting of machines among numerous construction projects, since these expenditures, depending on the distances and the number of moves being made), amount to 15-33 percent of the actual expenditures on the operation of the machines.

It is well known that at present each of the construction ministries or departments has "its own fleet of machines," therefore it is sufficient just to look at a map of Moscow Oblast with the designation of the regions of activity on its territory of construction ministries and departments to see that more than 10 interdepartmental machine fleets with a total number of basic machines of more than 11,000 are operating here.

Among them 41.6 percent of the regional fleet is concentrated in the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee, 10.4 percent--the USSR Ministry of Land Reclamation and Water Resources, 6.1 percent--the RSFSR Ministry of Highways, 5.9 percent--the USSR Ministry of Transport Construction, 3.8 percent--the RSFSR Mezhhil'kolkhozstroy [not further identified], 3.2 percent--the USSR Ministry of Power and Electrification, 3.2 percent--the RSFSR Interkolkhoz Construction Association, 1.5 percent--the USSR Akademstroy [not further identified], 1.2 percent--the USSR Ministry of Communications, 0.6 percent--the Ministry of Construction of Petroleum and Gas Industry Enterprises. The remainder is distributed among smaller construction organizations, repair enterprises and the capital construction departments of plants.

The studies conducted by us show that with the increase of the level of concentration of machines the tendency for the indicators of their use both in time and in output to improve is observed.

On the basis of the actual initial data of the statistical reporting of the organizations of the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee we obtained a regression equation of the annual number of machine-hours (Y) subject to the coefficient of concentration of back hoes in the fleet of the main administration, which has the form:

$$Y = 1876 + 1422K,$$

where K is the coefficient of concentration of machines in the fleet.

The increase of the level of concentration of machines in the fleet is also accompanied by the increase of the efficiency of the use of equipment. For example, whereas the output-machine ratio, which was calculated as the ratio of the amount of construction and installation work, which was actually performed by the contracting organizations of the oblast, to the average annual value of the operating machines and equipment, in 1979 came to 5.16 rubles, in the organizations of the Main Administration of Construction of the Moscow Oblast Soviet Executive Committee, in which more than 40 percent of the regional fleet is concentrated, it came to 5.7 rubles.

What has been stated makes it possible to draw the following basic conclusions.

Great reserves of the increase of the efficiency of construction work exist in the improvement of the organizational forms of the management of the fleet of machines.

The isolation of means of mechanization in the largest specialized subdivisions with allowance made for the formed conditions of the performance by construction trusts of the set amounts of work, the degree of concentration of construction projects, the development of the production infrastructure and a number of other factors, which have an influence on the performance of work, should become the basic direction of the further development and improvement of the machine-worker ratio of construction, since the degree of concentration of machines in independent mechanization subdivisions has a positive effect on the final economic results of the work of construction organizations.

It seems to us that the laws and trends of the improvement of the organizational forms of the management of the machine fleet in the immediate future will lead to the development of an independent subsystem of the management of means of mechanization in construction in the form of production associations.

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CONSTRUCTION MACHINERY AND EQUIPMENT

BRIEFS

NEW COMPLEX AT URALMASH--Sverdlovsk--At Uralmash a state commission has adopted a new complex with a working area of 15,000 square meters, erected by collectives of the Uralmashstroy and Uralmetallurgmontazh trusts. In February, 1983, the builders of Uralmashstroy's SU-23 installed the first columns. And now huge machines with programmed control have been mounted in the 200-meter complex. On these machines, parts weighing up to 100 tons will be processed for the new K-20 excavators, which have a 10 cubic meter bucket. [By V. Pankratov] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 1 Jan 84 p 1] 12461

NEW UNDERWATER LEVELLER--The PN-0.23/30(100) underwater level is intended for levelling of the bottom, rock fill, elements of the construction of assembled and solid bridgework, port structures, and other hydrotechnical structures. Levelling, just as in underwater geodesy, is conducted from a reference point, the absolute marker of which is known. The principle of a differential manometer (author's certificate No 735941 and author's certificate No 777420) is used in the construction of the level. The device consists of an assembled rod on which are marked centimeter divisions, a gauge carriage, and an indicator of level fixed on it. The vertical position of the rod underwater is secured by a heavy supportive thrust bearing and a float attached on the surface. The working depth of the measurements is up to 100 meters. The leveller has been adopted for the construction of hydrotechnical objectives on the Black Sea coast. The calculated yearly economic effect of the utilization of one underwater leveller amounts to 15,000 rubles. The use of this device allows levelling to be carried out at any depths and, within the limits allowable under regulations concerning the divers' safety, in currents and waves, and likewise at a distance from the shore over an unlimited area. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 23 Dec 83 p 3] 12461

PRODUCTION OF NEW EXCAVATOR--At the end of the present 5-year plan the country should get a new Izhorsk excavator, the Desyatka, which will replace the EKG-8I machine already familiar to miners. In comparison to the one produced today, the new machine will possess a variety of advantages. The capacity of the bucket will increase from eight to ten cubic meters, which will raise the productivity of labor by 20 percent. The application of so-called planetary gears on the turn drive and the lift will make it possible to lower the weight of the machine and reduce its clearance. The new mining giant will be more reliable and the crew will have additional conveniences. In order to speed up

the manufacture of such important parts of the Desyatka as the turning platform, Yu. B. Andronin's crew of metal workers and assemblers was enlarged. The members of the collective have assimilated peripheral professions and achieved complete interchangeability. They are all laboring on one project. Another metal workers' and assemblers' collective, directed by A. I. Korobkov, assumed the obligation of manufacturing the body for the ten cubic meter excavators three days earlier than the specified date. The first lots of the new machine have already been shipped for the Tomusinskiy quarry in the Kemerovo Oblast. [By I. Autergof, IZHORETS correspondent] [Text] [Leningrad LENINGERADSKAYA PRAVDA in Russian 23 Nov 83 p 2] 12461

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BUILDING MATERIALS

UDC 001.89:69

STRATEGIES FOR REDUCING CONSUMPTION OF CONSTRUCTION MATERIALS

Moscow EKONOMIKA STROITEL'STVA in Russian No 2, Feb 84 pp 23-28

[Article by Candidate of Technical Sciences G. S. Pereselenkov: "The Role of Science in the Decrease of the Materials Consumption and the Saving of Material Resources in Construction"]

[Text] The steady increase of the scale of construction in the country with the stable trend of the dominant increase in Siberia and the Far East remains the basic feature which determines the nature of the development of the construction sector for the foreseeable future.

In the performance of construction the objective changes of the conditions, under which it will be carried out, will play an important role--the increase of the proportion of the work on the renovation and retooling of operating enterprises with a substantially smaller increase of the share of new construction; the increase of the unit capacities of the enterprises being built; the need for the constant improvement of the products of construction under the conditions of intensive scientific and technical progress in the sectors which are their consumers; the need for the shortening of the investment cycle; the substantial increase of the share of capital investments in the development of the agro-industrial complex; the high absolute values of the program of capital investments.

The requirements of the increase of the efficiency of construction work and the changeover of the construction complex to the path of intensive development are posing among the most important problems the problem of the decrease of the materials consumption of construction and first of all the decrease of the specific consumption of metal products, the decrease of the specific consumption of cement and the strict economy of fuel and energy resources.

The problem of the decrease of the materials consumption of construction and the saving of material resources as one of the problems, which determine the efficiency of construction work, has existed for a long time and by now specific trends of its development and solution have already been identified.

The process of the industrialization of construction formed a quite stable structure of consumption of the basic construction materials and the dynamics of the changes in this structure. Thus, it is possible to regard as quite

steady the trend of the decrease of the amount of basic materials being consumed--cement, metal, lumber--per million rubles of the estimated cost of construction and installation work in case of the simultaneous increase of the absolute amount of consumption of these materials with an increase of the amounts of work. The trends of the decrease of the specific consumptions of lumber and metal in basic structural components and of the expansion of the use in them of concrete, keramzit and reinforced concrete are clearly traced. It is possible to regard as quite specific the basic directions, in which scientific research and the realization of the possibilities of decreasing the materials consumption of components and structures are proceeding. Among these directions are:

the improvement of the structural models and the planning and designing decisions with the more complete use of the reserves of strength of materials;

the increase of the reliability of components by the use of more durable materials, the protection of materials and components from adverse influences of the environment, the transition to serviceable and repairable systems;

the development of new alternative technical decisions with the use of less scarce materials;

the development and introduction of new materials and components;

the introduction of technologies, which make it possible to decrease the consumption of materials in the process of production and which recover waste products;

the more precise organization of construction and the performance of work, including the monitoring of technological discipline and quality, which makes it possible to decrease the losses and the amount of standard stocks and production waste;

the improvement of the equipment and technology of warehousing, loading and unloading and transportation operations.

The dynamics of the level and volume of the use in construction of the basic types of material resources during 1970-1985 (for the total amount of construction and installation work, which is performed by means of all sources of financing, including the capital repair of buildings and structures) is visible from the cited table.

In scientific research the principle of the decrease of the materials consumption of construction as a special-purpose task for a long time played a subordinate role and was not posed independently.

However, at the beginning of the 10th Five-Year Plan a significant portion of the scientific research work, which was included in scientific and technical programs, including the outlined scientific and technical results and in the evaluation of the impact, which is obtainable from the elaboration of different aspects of individual themes, had the indicator of the decrease of the materials consumption of construction and the saving of basic construction

materials. During the 11th Five-Year Plan this indicator became the basic one. The decrease of the consumption (the saving) of metal by 1.37 million tons, cement by 3.28 million tons and lumber by 120,000 m³ in terms of the amount of introduction at the end of the five-year plan should be ensured as one of the main results of the work on the comprehensive goal program and the most important scientific and technical programs for the sector "Construction" (in case of the fulfillment of the set assignments).

Description of materials	1970	1975	1980	1985 (plan)
Consumption of materials per million rubles of construction and installation work (in estimated prices on 1 January 1969 with allowance made for the corrections made in subsequent years; conditionally--in the prices on 1 January 1976)				
Metal products, total (including track and pipe), tons.	461	450	430	412
Steel structures, tons	85	85	66.4	67
Steel pipe, tons	131	131	141	132
Cement, tons	1400	1310	1260	1230
Precast reinforced concrete, m ³ of items . . .	1450	1435	1400	1360
Monolithic concrete and reinforced concrete, m ³	1400	1310	1200	1150
Brick and small blocks, thousands of tons of conventional brick	970	790	660	620
Timber and items made from it, m ³ of round timber	1520	1240	1145	1070
Plastics and synthetic resins, tons.	2.9	3.4	5.1	7.7
Consumption of materials for construction program				
Metal products, total, millions of tons. . . .	27	36	37.5	38.5
Steel structures, millions of tons	5	6.8	5.8	6.3
Steel pipe, millions of tons	7.7	10.5	12.3	12.4
Cement, millions of tons	81.8	105	110	115
Precast reinforced concrete, millions of m ³ of items	84.6	114.2	122	127
Monolithic reinforced concrete and concrete, millions of m ³	82	104	105	108
Brick and small blocks, billions of conventional bricks.	57	63	58	58
Timber and items made from it, millions of m ³ . . .	89	99	100	100
Plastics and synthetic resins, thousands of tons.	170	270	445	725

Among the scientific research themes, which as a result of the use of the results obtained during the elaboration should provide a substantial saving of material resources, it is possible to note the themes on the development and introduction of prestressed reinforced concrete columns with bar reinforcement for production buildings and columns made from high-strength concrete for multi-story frame civilian buildings, the theme on the development and introduction of three-ply panels with metal sheathings made of shaped sheets of decreased

thickness (0.6-0.7 mm) with more efficient corrugations, the theme which envisages the development of efficient methods and a technology of the performance of construction work in case of the development of subsurface space on the basis of the development of sets of machines and the use of chemical grouting, the theme on the replacement of pressure pipes with low-pressure pipes and a number of others.

It is necessary to note that the improvement of calculating, planning and designing decisions, the increase of the reliability of components, the use of materials of increased quality and of materials, which are differentiated by properties, and the introduction of new components are the basic directions of the solution of the problem of decreasing the materials consumption, which are envisaged by the scientific and technical programs during the 11th Five-Year Plan. Significantly less attention has been devoted to such directions as the introduction of serviceable and repairable systems, the development and introduction of new materials and technologies of work.

It is impossible to recognize such an unequal ratio of the directions of scientific development as sufficiently sound, and scientific research institutes during the period of the preparation of the programs of research for the 12th Five-Year Plan need to study the themes more thoroughly, while also keeping in mind the more complete utilization of these directions, which for the present are lagging, of the decrease of the materials consumption of construction and the saving of material resources. This is especially necessary in connection with the fact that the further industrialization of construction and the transfer of the maximum possible number of technological operations from the construction site to enterprises and plants of the construction industry require a fundamentally new approach to the entire construction complex, including plant production and construction and installation work, an approach which is impossible without the modernization of the sector on the basis of the enlargement of the range of materials being used, the changeover to new technologies and the revision of the attitude toward the functional qualities of the projects being built, particularly with allowance made for the fact that these functional qualities of individual structures, to the extent of scientific and technical progress in the sectors for which they are being built, are changing substantially, and the problem of their durability is coming into conflict with the problem of suitability.

In this connection the elaboration and extensive introduction of modern industrial systems with the development of a unified industrial planning conveyor, which ensures the complete conformity of the types of buildings and structures to the conditions of their subsequent use, and with the use of flexible volumetric layout arrangements, modular engineering support which is technologically effective in the area of design decisions and the possibilities of installation, the complete mechanization, automation and chemicalization of construction work and the principle of the complete supply "for the project" of parts, structures and combined blocks of complete plant readiness are becoming the basic direction of scientific and technical progress in construction.

The organization of scientific research for the assurance of the necessary rate of scientific and technical progress under these conditions should be

based on the systems approach to the solution of the problem. This is also substantiated by the fact that the problem by its nature is a complex one and can be divided into many levels.

If one regards as the levels the major technological transformations--the processing and preparation of raw materials--the processing of raw materials and the obtaining of a material or a semifinished product--the production of a component of the structure or block--the installation of the structure--the combination of a number of structures into a facility--the combination of a number of facilities into a territorial production complex, at each of these levels there is a large number of alternatives: in the choice of the material and the form of its use in the structure (for example, precast or monolithic design), the design decision (for example, a prestressed or conventional structure), the layout decision (for example, independent buildings or buildings interconnected into a combined building), the technology (for example, waste-free, with the recovery of waste products or resource-saving), a different combination of these alternatives. A large number of factors, such as the conditions of the performance of the work, the conditions of the operation of the component (structure) during the period of use, the natural conditions and the dynamics of their changes and market conditions, influence the choice of one alternative or another.

All three components of the systems approach to the solution of the problem--the analysis, forecast and synthesis of its organizational, scientific and technical aspects--should be fully utilized in case of its implementation. Here, along with statistical data and the generalization of experience, the materials, which characterize the potentials of enterprises of industry and transportation, the inclusion of which in the technological chain of the resource-saving process is necessary, should be enlisted for the analysis of the most effective means of saving resources.

When making the forecast of the means of scientific and technical progress in the areas of technology, which determine the possible means of saving resources, the trends and goals of this development and the interconnection of the sector "Construction" with related sectors should be studied, expert appraisals should be enlisted when determining the probable versions of the plan assignments.

The goal program method of scientific research and automated systems of the performance of scientific research work (ASNI's) and planning work (SAPR's) with an aim at the standardization of the reliability of structural components, blocks, buildings and structures should be fully utilized for the synthesis of the solutions of the problem as a whole and its individual parts.

Another important feature of the systems approach to the solution of the problem should be noted. It is the continuity of scientific work and the stage nature in the organization of scientific and technical progress from the formation of scientific ideas in the process of conducting basic research, their elaboration in the comprehensive scientific and technical goal programs and pilot industrial introduction through the plans of new equipment to mass implementation through the plans of the increase of the technical level of the sector.

The assurance of the reliability of technical decisions remains the most complex thing in the solution of the problems of the saving of resources. This is a complex task, which, at first glance, is at variance with the goals of the saving of resources, since the increase of the reliability of a structure is usually connected with the creation of specific reserves with respect to the material (the quantity and quality), the organization of backup systems and calculations for the most adverse, and therefore improbable combinations of loads. At the same time, as studies show, the efficient combination of the redundancy and service of construction systems (understanding by this term the structures which are functionally connected with the technological equipment), as well as the standardization of the levels of reliability subject to the type and purpose of the structure will make it possible to decrease by 5 percent and more the consumption of basic materials for their construction and of energy resources for operating needs. The scientific research in this direction should be aimed at the development of the principles and methods of linking technical decisions with the required level of reliability, at the standardization of these levels and at the elaboration of the criteria and methods of the optimization of technical decisions.

Since, as was noted above, there is a large number of alternatives of the technical decisions and factors which influence their choice, the optimization of the final version is possible only in case of a multicriterion evaluation and comparison. The multicriterion optimization of the versions and the making of a decision on this basis as a relatively new direction in the technical and economic calculations for the accomplishment of the tasks, which are included in the set of the problem of the saving of resources in construction, require further elaboration.

In particular, it seems that the axiomatic methods, which are presently the most widespread, both in case of known evaluations of the alternatives (a specific decision) and in case of the known laws of the probability distribution of the evaluations (the decision with risk) are unsuitable for this purpose, since in case of a large number of criteria (more than 3-4) and the versions themselves (more than 2-3) to form a system of axioms, in which the axioms of independence would not be violated, is a task which is hard to accomplish. Apparently, the choice of the versions of individual specific decisions (for example, the monolithic or precast version of the making of a component) should be regarded as the area of application of these methods.

The advisability of the extensive use of compensation methods, when the merits of one version according to some criterion will be offset by the merits of another version according to some other criterion (for example, the saving of cement according to one version is offset by the saving of steel according to another), also seems questionable. The conditionality, which is permitted in the equalization of the evaluations of criteria, even in case of their reduction to purely economic indicators (the one-time expenditures and the adjusted costs), is always fraught with the subjectivity and opportunistic nature of the approach when using these methods.

Direct methods, particularly the counterparts of the axiomatic methods, in which, in contrast to the axiomatic methods proper, the dependence of the criteria on external factors is not substantiated, but is postulated, which, if

the specialist making the decision has a sufficient number of analogues and definite experience, proves to be simple, afford somewhat greater possibilities. The most well known among the counterparts of the axiomatic methods--the method of weighted sums and the multiplicative method--in combination with the determination of the importance of each criterion according to the criterional (conditional) reliability of the planning decision may be the basic ones among those which will be used for the making of technical decisions which ensure the saving of resources.

In connection with the fact that the making of a technical decision, which fits the tasks of the saving of resources, involves the examination of versions which are very different in nature, the elaboration of methods of the thresholds of incomparability as applied to use in the solution of the given problem is of interest.

Since it is very often difficult to ensure the making of the optimum decision, which has at the same time the minimum indicators of the consumption of all resources, the methods of the use of man-machine procedures on the basis of models of mathematical programming and dialogue modes of the operation of computers are also of interest and are to be elaborated in detail. These methods afford the opportunity not only to speed up the sorting out of the versions and all the calculations, but also, what is very important, to make an analysis of the entire zone of the optimum versions and those which approximate them.

At each of the above-listed technological transformations any of the named methods of the multicriterion optimization of technical decisions may prove to be most effective and its elaboration to the stage of the method of calculations with a package of programs for the transfer of all the calculations to a computer is the task of scientific research.

As a whole all the enumerated scientific elaborations of individual questions of the complex problem of the saving of material resources and the decrease of the materials consumption of construction should conclude with general appearance in the standard base, ensuring by this the mass introduction of the results of scientific research. These results and their theoretical substantiation determine the role of science in the solution of this problem.

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BUILDING MATERIALS

BRIEFS

CLAYDITE-GRAVEL ABUNDANT LOCALLY--Maritime Kray--A specialized claydite-gravel plant has gone into operation at the Sibirtsevo Construction Industry Combine of Dal'stroy Main Administration for Construction in Regions of the Far East. Claydite was delivered here previously from distant suppliers. Its production locally will permit arrangement of the rhythmic output of components for large-panel house construction and will reduce its cost. The output of the new enterprise -- 100,000 cubic meters of gravel per year -- will satisfy the needs of all rural construction projects of the kray. By Yu. Ralin Text Moscow STROITEL'NAYA GAZETA in Russian 5 Feb 84 p 3 6264

FERROCONCRETE FOR RURAL TURKMENIA--A ferroconcrete articles plant has gone into operation near Chardzhou. Capacity of the new enterprise is 50,000 cubic meters of reinforced concrete articles per year. The plant will supply products for the construction of hydraulic installations in the eastern part of the Turkmen SSR, facing slabs for rural buildings, and other materials and structures, the need for which is growing constantly in connection with the expansion of rural construction in the republic. Text Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO in Russian No 11, Nov 83 p 23 [COPYRIGHT: Stroyizdat, 1983] 6264

NONCHERNOZEM BUILDING MATERIALS EXPANSION--Kaluga--A ferroconcrete articles plant built in Dzerzhinskiy Rayon has produced its first output. Its designed capacity is 80,000 cubic meters of precast reinforced concrete per year. Elements for lining irrigation installations and foundation blocks for housing will also be produced in its shops. The new enterprise is part of the Kondrovo Construction Industry Base of Glavnechernozemvodstroy Main Administration for Reclamation in the Nonchernozem Zone RSFSR, a powerful complex which will include, in addition to the ferroconcrete articles plant, claydite-gravel and large-panel house construction plants and scores of auxiliary facilities. Construction of the Kondrovo Construction Industry Base is planned for completion by the end of the current five-year plan. It will provide reclamation workers not only of Kaluga but also of a number of other oblasts of the nonchernozem zone with needed structures. In addition to its basic output for rural industrial construction, base enterprises will produce articles for construction of 70,000 square meters of housing annually in rural localities. Text Moscow SEL'SKAYA ZHIZN in Russian 11 Dec 83 p 3 6264

NEW THREE-PLY PANELS--General-purpose designs of panels have been developed for exterior walls, with suspension layers made from heavy and lightweight concrete, an efficient thermoinsulation plate, and discrete stamped metal braces between the concrete layers. A feature of the proposed designs lies in the inclusion of an outer layer in the static work of the panel in anticipation of all loads and climatic influences in contrast to panels with "flexible" braces. This makes it possible to ensure the required rigidity and strength, with decreased thickness of the inner concrete layer. Here it is possible to utilize any of the thermoinsulating materials produced by domestic industry: rigid glass-wool plates, foam plastics and honeycomb concretes. Resistance to heat transfer is 1.5-2 times higher in the new structures but the mass is 25 percent lower than in analogous single-ply panels. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 27 Jan 84 p 3/ 6264

MARITIME KRAY MATERIALS GROWTH--Vladivostok--The Uglovskiy Building Materials Plant is being expanded. Here last year the collective of Trust No 8 of Glavvladivostokstroy [Main Administration for Construction in Vladivostok] put into operation capacities for the production of 72,000 cubic meters of articles made from lightweight aggregate concrete. The construction of a new shop, in which the production of wall panels for housing and structures of industrial buildings is being organized, was recently completed. The Dal'shakhtostroy [Far Eastern Mine-Sinking Construction Trust] Trust of Glavvladivostokstroy has completed construction of a claydite shop. Construction industry plants will be abundantly supplied with lightweight fillers for concrete. This same trust is building a quarry, the crushing and grading installation of which will have capacity for processing 200,000 cubic meters of shales per year. [By A. Matveyev] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 16 Dec 83 p 2/ 6264

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